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Heterologous expression of Bacillus intermedius gene of glutamyl endopeptidase in Bacillus subtilis strains defective in regulatory proteins

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Abstract

Expression of the gene of glutamyl endopeptidase from Bacillus intermedius (gseBi) cloned on the plasmid pV has been studied in Bacillus subtilis recombinant strains with mutations of the regulatory proteins involved in sporogenesis and spore germination. It has been established that inactivation of the regulatory protein Spo0A involved in sporulation initiation resulted in a decrease in the expression of the gseBi gene by 65% on average. A mutation in the gene of the sensor histidine kinase kinA had no effect on the biosynthesis of the enzyme. Inactivation of Ger proteins regulating bacterial spore germination resulted in a 1.5-5-fold decrease in glutamyl endopeptidase activity. It has been concluded that expression of the B. intermedius glutamyl endopeptidase gene from plasmid pV in recombinant cells of B. subtilis is under impaired control by the regulatory system of Spo0F/Spo0A phosphorelay, which participates in sporulation initiation. The regulatory Ger proteins responsible for spore germination also affect expression of the gene of this enzyme.

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Keywords

Bacillus intermedius, Gene expression, Glutamyl endopeptidase, Recombinant strain, Sporulation